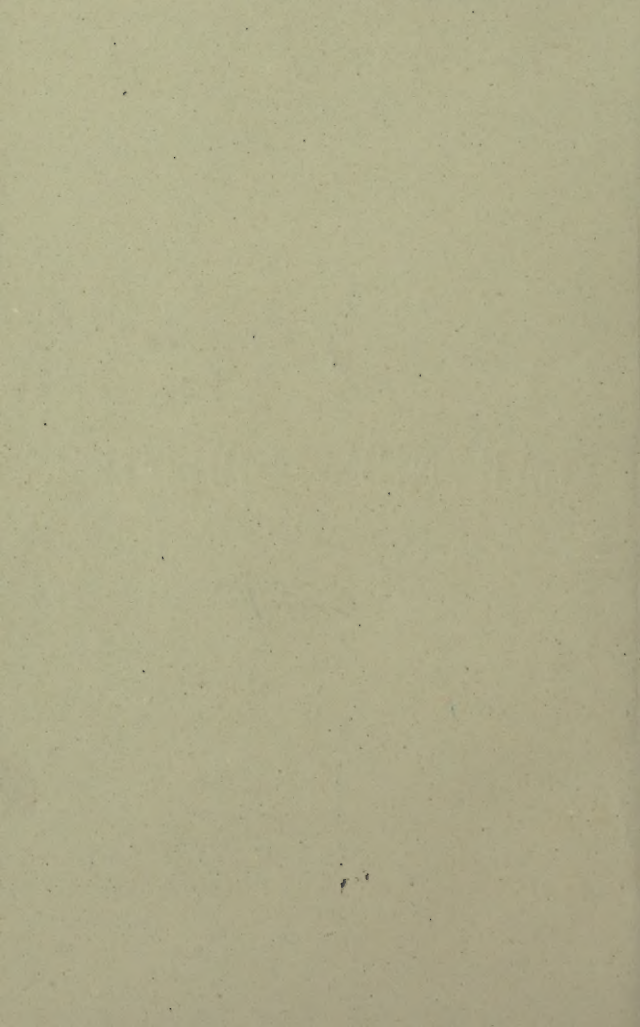


Lincoln (R. P.)

# LARYNGEAL PHTHISIS.

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# LARYNGEAL PHTHISIS.

A PAPER READ BEFORE THE

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ASSOCIATION OF NEW YORK.

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## LARYNGEAL PHTHISIS.

READ BEFORE THE MEDICAL LIBRARY AND JOURNAL  
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By R. P. LINCOLN, M.D.,

NEW YORK.

MUCH confusion has resulted from the use of the term laryngeal phthisis; but for the want of a better we will adhere to this, and at the same time will endeavor to describe the conditions that we would embrace under it. Formerly under the term phthisis were placed nearly all the diseases to which the human frame was liable when there was a tendency to a wasting of the tissues, writers justifying themselves by keeping in mind the Greek *φθίω*, to waste, and marshalling together every disease where this symptom obtained. Latterly doubt as to its significance has also been engendered by an attempt, in the opposite direction, to limit its applicability only to those cases where there was cotemporaneous tubercular disease in the lungs.

Than to take either extreme it seems to us more in accord with our advancing knowledge of disease to adopt a more moderate view. In doing this we would wish to have abandoned the idea that a phthisis is necessarily tubercular, that a laryngeal phthisis is always a local tubercular deposit, or the result of any specific disease of which it is a local manifestation. We can then allow ourselves to look upon it as the result of a combination of morbid tendencies, both local and general, and define it as an inflammatory affection, attended by thickening and ulceration which tends to

the impairment and destruction of the larynx and adjacent parts, and especially influenced by any cachexia.

Though laryngeal phthisis must have existed as a disease synchronous with pulmonary phthisis, yet, owing to the early vagueness of physical diagnosis, and the obstacles to post-mortem examinations, we find the first reference to it, and that very indefinite, by Galen. It was not till this century had passed its first decade that any undoubted and detailed account of it is found, and it is almost only within the period of the last decade—that of the laryngoscope—that our previous knowledge has been of much practical account.

Hippocrates does not mention it.

Galen's account is calculated to excite doubt in our minds, for he speaks of the affection as of little importance, and his report of its pathology is not at all like what we now know to obtain in the organic alterations of the larynx.\*

Morgagni does indeed refer to laryngeal phthisis; but while he speaks of ulceration of the trachea, and reports at length several cases of tracheal phthisis, giving an account of the manner of respiration, the character of the sputa, and the appearance of the throat, yet he does not apply to the ulceration of the larynx the reasoning that leads him to call tracheal phthisis a special affection. He concludes that many of the reported cures of phthisis (pulmonary) were probably tracheal.†

Borsieri was the first to proclaim that the larynx may become ulcerated to the extent of producing hectic and death.

M. Dauble proved the existence of laryngeal phthisis with pulmonary phthisis, and that laryngeal and tracheal phthisis differed only in situation.‡ Cayol, on the contrary, thought the two essentially distinct; but his

\* Meth. Méd., lib. v., cap. 2.

† De Sed. et C. Morb.

‡ Trousseau and Belloc. Trans. 1841, p. 16.

account of the symptoms of tracheal phthisis apply equally well to laryngeal phthisis.\*

Louis, in his work on phthisis, published in 1825, gave accurate and careful observations on the pathology of laryngeal phthisis.

Nothing further of importance was added to the knowledge of this subject till the invention of the laryngoscope, since which time we have been able to study upon the living patient that condition which before was only contemplated after ulceration had run its course, and the interference of the physician was no longer called for.

Now erosion, congestion, and thickening, described by Louis, as preceding or accompanying ulceration and necrosis, can be combated before total destruction has preoccupied the ground, and while there is yet opportunity, if not always to cure, at least to delay the fatal termination and assuage the pain of the suffering patient.

#### PATHOLOGY.

To enable us the better to study the pathological manifestations of this affection, let us review in brief the opinions of men eminent in this department, who have essayed theories founded upon their respective interpretations of morbid action in these parts.

Rokitansky, when speaking of laryngeal phthisis, says: "It is so rare, we are inclined to doubt its existence," but describes its appearance when present as follows: "It is either deposited in the form of gray granulations in the submucous areolar tissue, or, as yellow, caseous, friable, tuberculous matter, is infiltrated into the mucous membrane; in either case, and especially in the latter, it rapidly softens, and ulceration is established." †

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\* Recher. sur de la phth. tracheale. Paris, 1810.

† Path. Anat. Syd. Soc. Pub., vol. iv., p. 32.

He, however, does not think the thickening of the epiglottis can be accounted for in this way.

Mackenzie, through a very large experience, has "never seen the gray granulations referred to." \*

Contrast with this the following conclusions arrived at by Louis, after making 295 post-mortem examinations, especially considering this subject: "I have not in a single instance met with tuberculous granulations in the substance or on the surface of the epiglottis, larynx, or trachea; so that inflammation must be regarded as the most frequent cause of the ulceration of these parts." "However, as I have already said, the irritation or inflammation due to the continual passage of the contents of cavities is not the sole cause of the ulceration we have been examining, for, though rarely, these ulcerations do exist in cases where there are no cavities." †

Further on he states that he has never observed such ulceration in cases of gangrene of the lung, where the matter would reasonably be supposed to be particularly irritating, unless tubercles existed.

M. Andral considered the mucous membrane of the larynx a frequent seat of tubercular deposit in phthisical subjects, though located in the follicles; and he attempts to controvert the deductions of Louis. ‡

Niemeyer "hesitated to admit any ulcers as tubercular in which the disease, instead of springing from isolated nodules, develops from diffuse degeneration of the mucous membrane." §

After describing all the symptoms of pulmonary phthisis, he says: "All these symptoms, however, will not warrant a diagnosis of tubercle of the larynx, unless we are able to show that the lungs too are af-

\* Reynold's System of Med., vol. iii., p. 462.

† Researches on Phthisis. Syd. Soc. Pub., pp. 39, 42, and 43.

‡ Clinique Médicale, p. 490.

§ Practical Medicine, Amer. Trans., vol. i., p. 39.

fected. They are all capable of being produced by other kinds of laryngeal degeneration."\*

Cruveilhier and Rühle doubted the tubercular character of laryngeal phthisis, because they could not establish the caseous state of that lesion.†

Virchow, according to Krishaber and Peter, has observed in these ulcerations a proliferation of cells, agglomerating and passing through the same changes as tubercular granulations; and, confirming the opinion of Rokitansky, says: "The larynx is recommended to those who wish to recognize true tubercle."‡

Virchow, in a letter (Oct. 9th, 1868) to the authors of the article referred to, says: "I am certain laryngeal phthisis is due to tubercularization of the mucous membrane in the form of little, gray, transparent corpuscles, and is composed of lymphoid cells."§

He harmonizes the opinion of others by saying that owing to the exposed position of the larynx these tubercles give rise to superficial ulcers, and do not become caseous as elsewhere."||

MM. Hérard and Cornil maintain that the microscope gives conclusive evidence of the presence of tubercles.¶

Such conflicting views among authorities so eminent may be considered conclusive that there is no one pathological state uniformly present. In fact, we have repeated the old warfare of the theory of pulmonary phthisis; and, as in this case, it is not impossible to harmonize apparently different theories by adopting a

\* Practical Medicine, Amer. Trans., vol. i., p. 41.

† Dict. Encyc. des Sci. Méd., article Larynx, Krishaber and Peter, p. 672.

‡ Dict. Encyc. des Sci. Méd., article Larynx, Krishaber and Peter, p. 672.

§ Dict. Encyc. des Sci. Méd., article Larynx, Krishaber and Peter, p. 672.

|| Dict. Encyc. des Sci. Méd., article Larynx, Krishaber and Peter, p. 672.

¶ De la Phth. Pulmon. 1867.

doctrine suggested by Isambert, who proposes the identity of pulmonary phthisis with the different forms now recognized, and several phases of laryngeal phthisis.\*

#### CLINICAL HISTORY.

The different tissues that together constitute the parietes of the larynx afford us examples in laryngeal phthisis of every stage of inflammation, viz. : simple redness, swelling, erosion, ulceration, and, as sometimes happens to the cartilages, necrosis and caries.

The first effect of inflammation on the mucous membrane of the larynx, as elsewhere, is a change of color. In health its color is about the same as that of the interior of the lip, namely, a pale rose, but at the onset of an inflammation it changes to a deep red, or even purple; the depth of color depends on the intensity of the inflammation, whether it is acute or chronic; in the latter state the color is not so intense as in the former; its intensity is also modified by the location of the inflammation, as upon the vocal cords. Wherever the submucous tissue is scant and the mucous membrane firmly attached, the increase of color is but slight, whilst in those parts that are loosely attached the same degree of inflammation will be attended by a deeper coloring.

This change in color is not always permanent, *i.e.*, after death the same laws obtain as in hyperæmia of other parts. To illustrate this we need only refer to the post-mortem changes that occur to papules, chemoses, etc., where pallor succeeds to the bright color that was present when the vital functions were still active. This fact, namely, non-permanence of color, has probably led to many discrepancies in accounts of post-mortem appearances, and erroneous inferences drawn therefrom.

This redness may extend throughout the larynx or be

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\* Comptes-rendus de la Soc. de Méd. des Hôpitaux, 27th Dec., 1872.

confined only to a small part. Frequently only the laryngeal surface of the epiglottis will be involved, or perhaps only the bottom of the ventricles. Its presence may usually be inferred, when we have no more positive proof, from an excess of mucus.

The opposite condition, that of anemia, is often observed, particularly in emaciated subjects and those in the incipient or advanced stage of phthisis pulmonalis. This state does not render the presence of ulceration in some part of the larynx improbable, and we should not ignore this fact while making our examinations.

Succeeding redness we have an increase of thickness. The mucous membrane itself becomes swollen and soft, not only from the large amount of blood attracted to the part, but also on account of the infiltration of serum within its substance. But the tumefaction depends chiefly on the infiltration of the submucous cellular tissue, which in this affection readily partakes of the inflammatory action of the contiguous mucous membrane, or it may be itself the primitive seat of the morbid action where this texture is abundant and loose, as on the anterior side of the epiglottis, the aryteno-epiglottidean ligaments, and lips of the glottis. When the inflammatory action is of a more chronic character, its product may be plastic rather than serous, in which case the mucous membrane will become denser, hypertrophied, and frequently uneven, while, when considerable serum is effused, it becomes pulpy and soft, and easily breaks down, presenting a condition characteristic of another stage.

When the inflammation has its primitive seat in the submucous cellular tissue, the appearance of the mucous membrane, except the general fulness, exhibits but little alteration from normal, and in color may be even paler.

If the first conditions of redness and swelling persist, we have, sooner or later, a state first recognized and

described by Louis as erosion. They exist wherever, from superficial inflammation, the epithelium has been destroyed, and are usually circumscribed. The villi may themselves be removed at the same time with the epithelium, in which case the mucous membrane will appear slightly depressed, and the color at that point, especially at its base, a little lighter than the surrounding. Usually, however, they persist, and present a bright-red, velvety appearance. Erosions are best recognized, according to Louis, by floating the specimen in water, when, according to Trousseau, the villi will stand out like the "villi seen on a dog's stomach." These villi often hypertrophy, a part being destroyed, and resemble granulations, and doubtless are often considered tubercular.

These erosions pour out a muco-purulent secretion, and when they have attained the condition resembling granulations, bleed readily to the touch.

More important than the preceding, and of a class of which erosions may be considered the first steps, are the true inflammatory ulcerations. The inflammatory process progressing, the vitality of the denuded mucous membrane soon becomes impaired, and the villi even becoming destroyed, we find an excavated ulcer with a base of submucous tissue. This latter, in turn, soon gives way, and the remaining subjacent organs form successively its base until the various cartilages are exposed or involved, and finally yield to the destructive process. This ulceration may extend not only in depth, but also in periphery, until we sometimes find the whole internal surface of the larynx involved. When the ulcers are small they are usually round in shape, but when large are oftener irregular, and may be formed by the union of several small ones. They may be looked for in any part of the larynx, a favorite seat being at the arytenoid commissure and sides of the arytenoid cartilages; they are not unfrequently found upon the vocal cords.

While the effect of an erosion may be completely repaired, the cicatrix of the wound of an ulcer presents a puckered appearance, or, when extensive, its location is represented by a thin film of connective tissue, and, according to Ryland, is never healed by granulation.\*

There is another form of ulceration, undistinguishable from the latter in its advanced stages, but which has a beginning pathologically distinct. As we have already seen, mucous glands are numerous, and often quite large in different parts of the larynx, and we should be prepared to find them subject to the same pathological changes as similarly constituted glands elsewhere. When they are first involved in morbid action, either when it is limited to its own substance or when due to an extension of inflammatory action from the adjacent tissues, they appear as small elevations, the size of a pin's head, with the mucous membrane covering them, shining, tense, and of a light color. If the contents of this little cyst is evacuated at first, it is found to be thicker than normal mucus, and honey-like; but later, if they retain their continuity, the contained secretion in rare instances becomes still more inspissated, and even cheesy.

It is this condition that we can easily understand might be mistaken for miliary tubercle in or on the mucous membrane, and has even been described as such by some recent writers. This same condition, never more strikingly apparent, is not unfrequently found accompanying an anæmic state of the larynx where mal-nutrition is present.

In the inflammatory state especially, the walls of these glands are unable to resist the tension from within, and finally give way when a small ulcer marks the site of each. If the degree of inflammation is con-

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\* On the Larynx and Trachea, p. 24.

siderable, the vitality of the contiguous tissues becomes enfeebled, and the destructive action will enlarge this newly formed ulcer, when its appearance and progress will be the same as the true inflammatory ulcer described above. In this form of ulcer, too, the papillæ will often appear on its border, become hypertrophied, and resemble red hemorrhagic tubercles.

Follicular laryngeal phthisis may appear independent of inflammation of other tissues, but is seldom if ever absent when the other tissues are primarily affected; and its location may be any part of the mucous surface except the vocal cords. These follicles are isolated upon the free border of the epiglottis, but increase in number till they become aggregated at its base.

When the cellular tissue of the larynx has become involved in a high grade of inflammation, instead of its terminating in resolution we may have an abscess, and particularly is this liable to happen if the perichondrium becomes involved, in which case we may have either caries or necrosis of the cartilage even to the extent of their complete destruction and expulsion.\* In consequence of these abscesses opening through the mucous membrane we may have ulcerations of a fistulous character, not unlike in their history and progress anal abscess and fistula, at the bottom of which diseased cartilage will often be found. They usually open into the larynx, but sometimes they discharge their fetid contents into the œsophagus or pharynx.

Whatever be the origin of the ulceration, it may extend to and invade any of the cartilages of the larynx, and one or all may be affected. The loose cellular tissue by which they are surrounded, as we have seen, easily loses its vitality, and any deposit of pus immediately

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\* Galen reports a case where the whole larynx was expectorated. *Young on Consumption*, p. 142.

in their vicinity destroys their nutrient connections, and they consequently soon perish in whole or in part.

During the process of inflammation here, the cartilage is transformed into a bony substance, if a part of its nutrient supply is preserved, while another portion crumbles away, or, according to Porter, an earthy deposit similar to that in degenerated arteries takes place.\* An entire cartilage may be thus transformed, when it acts as a foreign body, and an abscess results, which, examined after death, is found to contain pieces of carious bone—white, unorganized, fetid, and spongy. A greater part may have been expectorated before death, but some remnants of the debris will usually be found.

The arytenoid cartilages are most frequently affected, and after them the hard portion of the cricoid. Necrosis is usually a result of an abscess, while caries results from an ulceration starting in the mucous membrane: the former, according to Trousseau, is more common among adults, and the latter among children.†

Edema, to some extent, is always present with any considerable degree of inflammation: and, though this is but a symptom, and, so to speak, an accident, of the morbid action, it may of itself become the cause of death.

Rarely, if ever, do any one of these pathological conditions occur singly. In any larynx where, for instance, we have caries, we find ulceration of the mucous membrane and cellular tissue, and with this, with rare exceptions, edema and engorgement of the mucous membrane, together with follicular inflammation.

\* On Larynx and Trachea. London, 1837. p. 130.

† Clinical Lectures, Am. Trans., vol. iii., p. 94.

The epiglottis, being similarly constituted and subject to the same influences, is liable to the different morbid actions above considered, except necrosis. Its mucous membrane becomes thickened and indurated, as well as thickened and softened, and in either case the organ may become two or three times thicker than normal, and lose its flexibility.

While the minor degrees of ulceration are here less common than in other parts (probably because of the paucity of the muciparous glands in its upper part), the deeper forms of ulceration are more prominent in their effects and quite destructive. It is common to find it much distorted by previous inflammation,\* and it may be even perforated. Ulceration and caries of its border result in a gnawed appearance, and may effect its total destruction.

Rees reports in *The Lancet* of March 17th, 1860, a case of strumous ulceration of the larynx, with destruction of one-half of the epiglottis; and the same journal of April, 1868, contains an account of a case with the epiglottis totally destroyed, and the wound healed. In neither of these cases was there any impairment of the voice, and but little difficulty in deglutition.

We can add to these, two cases of total destruction of the epiglottis, attended with only slight hoarseness, and but little difficulty in swallowing.

The above-described changes, that have been spoken of as belonging to the larynx, are found, under like circumstances, in the trachea, and M. Cayol has written a well-known thesis descriptive of them, under the title of *Tracheal Phthisis*, in which he attempts to prove it to be a primitive and tuberculous affection.†

Laennec states that ulcerations of the trachea are much more common in perfectly healthy than phthisi-

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\* Rokitsansky. *Op. cit.*, vol. iii., p. 280.

† Paris, 1810.!

cal persons, which statement Louis pronounces erroneous, and attributes to an error of memory.\*

The mucous membrane above the larynx being histologically the same as that below, is subject to the same morbid actions as the larynx itself.

Bennet says the mucous membrane of the larynx is as liable to the same changes as all other similar membranes, and is as frequently involved.†

Statistics upon this point, except in the case of phthisis pulmonalis, are not very satisfactory, and will not be more so till the laryngoscope is in more general use; even in these subjects we have but few sources to draw from, for comparatively few observers of autopsies have noted the condition of the larynx. The number, however, is amply sufficient to convince us that laryngeal ulceration, in whatever tissue it may have had its birth, or whatever may have been its morbid cause, is particularly common in subjects of pulmonary phthisis. Andral states that in three-fourths of the phthisical patients treated in the wards of M. Lermier, the larynx was affected in different degrees.‡

Louis gives, in his work on phthisis, the following results of 295 examinations: Ulceration of the larynx, 29 per cent.; of the trachea, 36 per cent.; and of the epiglottis, 18 per cent.

Trousseau and Billoc report five cases where examinations of the lungs were made, and no tubercles found, where death is presumed to have occurred from an affection of the larynx, attended with an ulceration of its investing mucous membrane.§

Porter reports four cases of disease of the cricoid

\* De l'Auscultation Médiate.

† Pulmonary Tuberculosis. Edinburgh, 1853.

‡ Clinique Médicale. London, 1837, p. 130.

§ Op. cit.

cartilage that proved fatal,\* and M. Cruveilhier five similar.†

Of 23 cases of consumption, in which the larynx was examined, Ryland found 44 per cent. with ulceration,‡ S. Scott Alison, out of 26 cases, in all stages of consumption at one time in the hospital, found 73 per cent. were suffering from disease in the larynx, and of those in the third stage a percentage of 83.§

Of 19 cases of laryngeal phthisis, in our private practice, 14, or 73 per cent., had accompanying pulmonary phthisis; 9, or 47 per cent., would be classed as scrofulous. In four cases ulceration existed on the left side only, and in three on the right; six of these seven were in patients suffering from pulmonary phthisis, and all were affected on the side of the only or greater diseased lung. In the remaining twelve cases the ulceration was situated either in the commissure, or on both sides at the same time.

#### ETIOLOGY.

That hyperæmia, erosion, and ulceration of the mucous membrane of the larynx may be precursors of the deeper and more destructive morbid changes, every observer will admit, and hence, in looking for the cause, anything that leaves behind the superficial disease must be regarded as a possible step in the forms to be dreaded, and attended with danger both to the healthy physiological action of the part, and even to life itself.

Whether laryngeal phthisis, in all the different stages we have described, occurs idiopathically, is a question open to discussion; that it occurs symptomatically has generally been the accepted theory.

\* *Op. cit.*

† *Diet. de Méd.*, art. *Laryngite*, cited by Ryland, *op. cit.*, p. 81.

‡ *Op. cit.*, p. 73.

§ *On Morbid Throat and Consumption*. London, 1860, p. 6.

Amongst the advocates of the former theory may be mentioned Lænnec, Cayol, Rokitansky, and Trousseau, while Louis, Niemeyer, Mackenzie, and many others support the latter.

That the less important pathological manifestations often occur without being followed by the more destructive conditions, comes within the observation of every one, as is witnessed most commonly in acute catarrhs of the larynx, as a consequence of heart-disease, and after different fevers; but whether these same appearances are the preliminary steps to, and will pass into, the more serious ulcerations of the deeper tissues, is a point of vital interest. To decide this we must extend our inquiries and investigations beyond the larynx, considering the general condition of the patient as well as the period the disease has existed in the larynx.

Ulceration of the mucous membrane, as well as of other parts, is a frequent consequence of acute inflammation; but whether this be the cause of the disease we are considering, or whether it supervenes on a chronic inflammation, or is induced by irritation in a distant part, as in pulmonary phthisis, or depends on a local tubercular deposit, neither its locality nor its appearance will alone determine.

Hence, we must include among the exciting causes the same conditions that result in acute as well as in chronic inflammation of the larynx, and which usually tend rapidly to recovery. Among these are cold and moisture, whether inspired or applied externally, as a draught upon the neck, or a neglected wetting of the feet. The simpler forms of the disease are particularly liable to be aggravated by efforts at public speaking, or violent coughing, and thus an inflammation, that was at first of a superficial character, and that otherwise would naturally pass off in a few days, will assume a chronic course, and perhaps extend to the deep tissues. Particles of inhaled dust, or other irritating

substances, will frequently induce disease of the larynx as well as of the lungs themselves; imprudence in dress, from too free exposure of the neck, particularly in ladies. Prof. Alison, of Edinburgh, many years ago recognized this fact, and deprecated the practice of shaving, highly esteeming the beard, both as a protector of the throat, on account of warmth, and also because it served as a natural respirator; and he advised the stonemasons, particularly, to wear it, to filter from the respired air the particles of dust.\*

Louis, at one time, following the opinion of Sylvius, attributed all these morbid appearances to the contact of sputa from the lungs, that was constantly passing over the mucous membrane of the larynx in cases of phthisis pulmonalis. His reason for this inference was, that this condition oftentimes presented itself on the posterior part of the larynx, and also of the trachea, in his examination of patients that had died of consumption. Afterwards observing a few cases where this condition was not present, and there was, nevertheless, ulceration, and also, as we have already seen, failing to find it in cases of gangrene of the lung, he was compelled to admit that there must be additional influences at work.

Though, fortunately, there are many cases of pulmonary phthisis that escape ulceration of the larynx, yet frequent observation will convince one that it only appears, in many cases, subsequent to the disintegration of the lung-substance, and after purulent expectoration has been established. That the contact of pus ought to be considered one of the causes of this affection, in addition to the coincidence already noted, is rendered probable from the analogous fact that we often find the integument itself excoriated and ulcerated from being constantly bathed in pus for a long

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\* Edinburgh Med. Jour., Dec., 1861.

time. In addition thereto we could cite several instances of cases that we have treated where ulceration of the larynx could only be explained by the contact of pus that had run down over the pharynx from the posterior nares in posterior nasal catarrh.

Exceptionally, inflammation and its consequences may appear in the larynx by reason of its extension through the continuity of surface from the pharynx, and possibly from the trachea; but when this occurs there are probably other determining causes of a constitutional nature at work that are of a progressive character. We have already seen how cases of pulmonary phthisis in its advanced stages may have a considerable influence in inducing ulceration of the larynx, but there are still a large number of cases where morbid action is already established in the larynx before the stage of purulent expectoration has been reached.

A full appreciation of this fact is of paramount importance, and upon an early recognizance of this state will often depend the future welfare of our patient. In this respect it must be acknowledged that the first evidence of the laryngeal may be but a precursor of a more formidable trouble in the lungs; both may be due to the same cause, first recognized in the larynx by the aid of the laryngoscope, before the disease in the lungs has had time to work changes there so great as to be detected by the means at our command.

Therefore, notwithstanding the many causes we have seen may in turn be considered responsible for some of the different phases of laryngeal phthisis, we would name another, which, so far as we are informed, has been altogether ignored, but which, nevertheless, may reasonably occupy a place in our list that would otherwise remain incomplete; we refer to the phenomenon of **reflex action**.

Prof. Brown-Séquard, in his work on the "Physi-

ology and Pathology of Nervous Centres," shows the great power of this influence in the modification of secretion and nutrition as seen in conditions of congestion or anæmia, hypertrophy or atrophy, and ulceration. He has supported this theory both by actual experiment and by citing many unquestioned cases, among others, instances of orchitis due to irritation of the ureter by a calculus; of inflammation of the stomach from irritation of the filaments of the par vagum in the œsophagus; of pleurisy due to an irritation of the nerves of the breast by some operations;\* and of two cases of peritonitis and death from an operation of the cervix uteri without intercurrent inflammation of the uterus or vagina.† There are numerous instances of inflammation of one eye extending from irritation into the other. Dr. Cain, of Charleston, reports cases that seem to show that croup may be produced by a reflex action starting from the stomach.‡

These secretory or nutritive reflex phenomena occur chiefly through two modes of action; by one the nervous system determines an increase in the attraction of blood to the tissues, when we have a congestion and its consequences; while by the other, the force, instead of acting on the parenchyma of the tissues, operates upon the walls of the blood-vessels and produces a contraction which results in anæmia and its sequelæ.§

This action through a centripetal nerve to a centre is reflected back by a centrifugal, preferably starting from the same segment.|| The lungs and larynx occupy relations fulfilling these conditions essential to the exercise of this phenomena, their nerves being the pneumogastric and spinal accessory with a free anastomosis from the sympathetic.

\* Op. cit., pp. 162-163.

† Southern Jour. of Med., 1847, p. 377.

‡ Op. cit., p. 175.

† Op. cit., p. 169.

§ Op. cit., p. 173.

The great abundance of this nerve-supply to the larynx is often noted, but its significance not fully understood. Luschka speaks of their remarkably free distribution in its mucous membrane terminating in oval bodies, and others provided with numerous ganglion-cells.\*

From this it seems we have here eminently a field of reflex action; in fact each movement of respiration is an illustration of it, and though doubtless these nerves have other important functions, that they must be chiefly instrumental in the reflex phenomenon of coughing as well as of any organic change therein often found, is supported by reason as well as by analogy.

Another argument in support of the theory that reflex action from the lungs sometimes exercises a controlling influence in the modification of nutrition in the larynx, may be inferred from the fact that laryngeal phthisis usually commences on the side corresponding to the pulmonary disease.† A similar inference may be drawn from the fact that paralysis of one vocal cord, without ulceration, which sometimes occurs in cases of pulmonary phthisis, is almost always on the side corresponding with the diseased or greater diseased lung.

The excessive pain in the larynx that is often experienced by patients in the last stages of pulmonary phthisis, though there may be no lesion discoverable there, is also significant in this connection.

The inflammation and ulceration of the mucous membrane and soft parts of the larynx may itself be a cause, when once established, of further destructive disease.

When the inflammation has extended to the perichondrium this may become inflamed to a large extent,

\* Stricker's Histology, Am. Trans., p. 425.

† Cohn, On Diseases of the Throat, p. 362.

when, as happens in analogous cases with the periosteum, we have a death of the contained organ, which, acting as a foreign body, in turn gives rise to an abscess. At other times the ulcer will burrow to and through the perichondrium, and, encroaching upon the cartilage, we may have caries. In this case there seems to be a strong effort at repair, which shows itself, according to Trousseau,\* in the incomplete ossification which always takes place, and which is not observed in necrosis, where the severance of nutrition is overwhelming from the first.

The influence of the serofulous diathesis is often apparent in this affection.

The use of this term here may seem vague, but every one recognizes a vitiating, and often controlling, condition in some systems, of a constitutional nature, slow in its development, but attended with a tendency to disorganization of different tissues, as the cartilaginous, the glandular, the skin, and the mucous membrane. The latter, which in different parts are very liable to derangement, we find illustrated in frequent discharges from the nose, ears, eyes, fistule connecting with mucous membranes, and in the organ we are considering, all its tissues from its mucous membrane to and including its cartilages. We further recognize two distinct varieties, the sanguine, with its clear, fair skin and delicate features, and the phlegmatic, with its coarse, dark, sallow skin and uninviting countenance. Perhaps it is only a coincidence, for the number is not sufficient to establish a rule, but of nine cases in our own practice of destructive ulceration of the larynx where struma assumed to be the controlling influence, seven would be classed among the phlegmatic.

In this subdivision of laryngeal phthisis it is common

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\* Trousseau and Belloc, p. 24.

to find coexisting enlarged and diseased tonsils, and associated therewith an enlargement of all the soft parts of the pharynx, and frequently of the cervical glands.

Among the remedies that have been accused of inducing this disease, Drs. Graves and Stokes claim that in enfeebled constitutions any disease of the larynx may terminate in ulceration of its cartilage if mercury is used.\*

Syphilis is a very frequent cause of destructive ulceration of the larynx, but it is beyond the limits of our plan to consider this extensive part of the field in detail, and we shall only refer to it under diagnosis.

Hereditary influence should not be so generally ignored among the causes.

When we find in the same family, in successive generations, unusually large noses or ears; or, if you please, supernumerary fingers or toes, analogy, at least, would lead us to expect in morbid changes in different organs the influence of transmission exercised, and though this is generally admitted in some of the more serious and pronounced diseases, as in pulmonary tuberculosis, yet in those less striking it is too often ignored.

We must not disregard the injurious local effect of the excessive use of tobacco and alcoholic drinks, or extremes of temperature in any drink, in one already predisposed to this affection.†

Age and sex have been considered among the predisposing causes, it being most common in middle life, and more frequent among males; but this greater frequency seems but natural, from the greater exposure to the vicissitudes of weather to which men are subject.

As for local tuberculosis ever being the cause of laryngeal phthisis, we think what has already been said under pathology is sufficient to prove how rarely this

\* Dublin Hosp. Reports, vol. v., p. 82.

† Similar unfavorable influences, we believe, attend the use of highly seasoned food, and a too free use of common salt.

is the case, though the testimony to its occasional presence is too reliable to be questioned. On this point we will only quote the words of S. Scott Alison, which may be taken as an expression of our own experience : "Tubercular matter in masses even so small as mustard seeds, I have never seen in the larynx or trachea."\*

Whether pulmonary phthisis may cause laryngeal phthisis, or *vice versa*, is another question.

We have seen how frequent laryngeal phthisis is; in how many shapes it may show itself; under what conditions it appears; that it is frequently associated with phthisis of other parts, particularly of the lungs; that it may appear before, at the same time with, or after, the latter disease has been established; and it is natural to seek if there is any necessary relation between the two, and whether we shall array ourselves among the followers of Dauble, Cayol, Laennec, Borsieri, and Trousseau, who claim that laryngeal phthisis is the frequent cause of pulmonary phthisis, or with Louis, and many more recent investigators, who believe it is pulmonary phthisis that causes the laryngeal form.

It often happens that the most divergent opinions can be reconciled, and by compromising these two views we can explain many cases that would otherwise prove perplexing. We do not think it would always be proper to place the two diseases, when they coexist, in the relation of cause and effect. The number of instances of laryngeal phthisis that we have seen in its first stages, when there was hyperæmia, erosion, and even ulceration, before any disease could be detected in the lungs, would lead us to attribute to each the same or similar causes, viz., a general diathesis, first showing itself in the most vulnerable part in a subject already predisposed by hereditary or acquired disposition. It is not unlikely the determining force in locating the

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\* Morbid Throat, p. 8.

first symptom of the malady may be either a cold in the throat, *i.e.*, an acute laryngitis, or a cold in the chest, *i.e.*, an acute bronchitis or pneumonitis, which once having seized hold of a system debilitated from any cause, makes it an easy prey.

#### SYMPTOMATOLOGY.

Whatever be the cause of laryngeal phthisis, we always have a chronic inflammation to deal with, subject to exacerbations due to intercurrent acute attacks. There is, therefore, no well-marked difference in the subjective symptoms of this affection over other chronic laryngeal diseases.

In addition to the sensation of tickling, which this affection shares in common with all other inflammatory diseases of the larynx, usually the first symptom of which the patient complains, and which leads him to consult his physician, is a cough. This, which at first may be but a slight and ineffectual effort to clear the throat, gradually attains a more pronounced character, and often becomes spasmodic in its nature. The sound of the cough, being modified by the same organs that form the voice, corresponds in a degree with it. When we have dysphonia, we will have a rough, hoarse cough, entirely destitute of resonance; this may be due, not necessarily to a deficiency of volume of air from the lungs, but to the action of the glottis (the healthy explosion of which, so to speak, gives the clear ringing cough), that is impaired either by some obstacle that prevents the contraction of the muscles, or by some modification of the cords themselves.

The patient will sometimes give you an account of an attack of sore throat, from which he thinks he never entirely recovered, but as often he cannot lay claim to any exciting cause so definite. With the increase of the disease the cough will become excessively harassing, particularly at night, and almost always

aggravated by a change of temperature, as when going from a warm room into the outer air, or *vice versa*.

The vast majority of patients complain of pain of a dull, aching character, and often of a smarting and burning, amongst the early phenomena. At first this is not increased by pressure, but later in the disease, when the tissues are much swollen, it is much aggravated by pressing the larynx back or by compressing its ala.\*

Distinct from the sensation of pain, but closely allied to it, is that of dryness, which is alone very distressing, and not allayed by frequent applications of fluid.

You will also be told of difficulty in deglutition, and of actual pain in the effort, as well as in the act, of swallowing. This occurs when the epiglottis is thickened or destroyed in whole or in part, so that its office is imperfectly performed, and particles of food or liquid, which is more liable to happen, passes within the larynx and excites spasmodic coughing.

When there is much œdema within the larynx, and particularly when the arytenoids and their appurtenances are involved—and they almost never escape—their compression by the muscles of deglutition may be attended by so much pain that the patient will often abstain altogether from attempting to swallow, and, unless efforts for relief are availing, we may literally witness the unpleasant spectacle of a starving and famishing patient.

Disturbance of respiration does not attract attention under ordinary circumstances till the disease is somewhat advanced. Almost the first of the phenomena of this derangement occurs only during inspiration, the sound becoming rough and sufficiently audible after exercise to attract attention, while the expiration may

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\* Late in the disease, to which there are very few exceptions, when the pain becomes excessive in the larynx, it extends with equal severity to the ears and down the neck to the shoulders.

be without effort and natural. Should an acute laryngitis occur during this stage we will have a stridulous respiration, and the recovery from the attack will be more than usually slow; but ordinarily the dyspnoea is in proportion to the development of the disease.

If there is co-existing pulmonary disease, particularly if there is much debility, a panting respiration, after even slight exertion, will be an early symptom, which the patient will wait to recover from before replying to your questions.

When the calibre of the glottis is encroached upon, either by sclerosis or by œdema, we will have constantly all the symptoms of œdema glottidis, and at all times the respiration will be labored, while in the last stages of the disease there will be paroxysms of dyspnoea, suffocative in their nature, which the patient often calls asthmatic. These paroxysms, which commonly at first make their attacks at night, a little later are excited by any violent exercise, and are attended with a sense of oppression, and often with a flushed or livid condition of the face, and an anxious expression to the whole countenance, even when there is no disease in the lungs themselves, though that will make this symptom much more marked.

The function of the larynx is of course always impaired in this affection. In the early stages of the disease the voice may only have its quality slightly altered, but before the second is passed there will be complete aphonia, which at first may be remittent, but sooner or later constant; at first there may be only a weakness after use, to be restored by rest; but in a short time it becomes continually husky with an indistinctness, then a uniform hoarseness and discordance, and finally only a rough whisper.

Simple weak phonation usually attends, and is consequent upon a general congestion of the mucous membrane of the larynx, with its consequent dryness, and

perhaps slight tumefaction; huskiness upon the thickening of the vocal cords.

The complete loss of voice depends upon ulceration of different organs, particularly of one or both vocal cords, and upon œdema.

This inequality or discordance of the voice is often noticed in laryngeal phthisis, and cases have been reported by Merkel and Türk where a double tone was produced, and explained by a collection of mucus between the vocal cords and ventricular bands, and by growths and polyps on the vocal cords dividing the glottis into unequal parts.\*

The expectoration in simple laryngeal phthisis is almost always of a moderate quantity, and varies in character with the different stages of the disease, from a frothy mucus, in the first stage, to purulent, with, at times, traces of blood, and exceptionally the debris of disintegrated cartilage.

Before the disease has very far advanced, the product of the muciparous glands becomes, in consequence of the congestion, quite gelatinous, when the sputa will resemble prepared starch; this often contains dark particles from the inspired air, or what Dr. S. Scott Alison has described as the carboniferous corpuscle. Sometimes the frothy mucus will contain small but distinct drops of pus, and even blood, which are thrown off circumscribed ulcers or sinuses leading to the seat of a former abscess; at other times the sputa will be uniformly purulent, but varying in degree and very tenacious.

Usually the sputa is raised with some difficulty, and after repeated efforts by a process of clearing the throat rather than by a deep cough. This is caused in the first stages of the disease more by the congested and swollen state of the parts than by the amount of the sputa;

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\* Quoted in Boston Med. and Surg. Jour., Nov. 21, 1872, p. 558.

but later the tenacious muco-purulent sputa may be comparatively abundant and yet adhere strongly to the bottom of a large but superficial ulcer. If there is accompanying pulmonary phthisis or chronic bronchitis, the abundance of sputa from this source will mask any distinguishing features of the sputa of laryngeal phthisis.

An appearance of blood in the expectoration is not unfrequent during the course of the disease. It is usually small in amount, continues but for a brief time, and occurs at short intervals.

Coming on usually after an effort of coughing or clearing the throat, the sputa is then streaked with bright arterial blood, though sometimes a small clot will be thrown off, in which case it may be of a darker color; in the first instance it is seldom so intimately mixed with the clear or yellow sputa as when it comes from lower down in the air-passage and when in clots, usually smaller than when it comes from the lungs.

The discharged blood may issue from any of the tissues of the larynx. When the mucous membrane is highly congested, as may be the case whatever be the stage of the disease, some small blood-vessel may be ruptured in the violence of coughing and a small quantity of blood escape. We have seen it *in situ*, having burrowed under the mucous membrane a short distance, as sometimes occurs beneath the conjunctiva, from injury. The same condition is also sometimes seen in the pharynx. Hemorrhage may also occur from a blood-vessel divided in its course by the progress of an ulcer.

Emaciation is not a prominent symptom in simple uncomplicated laryngeal phthisis, except in the very last stages, when it is a result, less of a consequent drain on the system than on account of imperfect deglutition, labored respiration, and wearing cough

that interfere with the repair of the system, arterialization of the blood, and restorative sleep.

Under the same circumstances as the loss of flesh, when a hectic condition supervenes, we will have a harsh, dry state of the skin, with rarely a slight elevation of temperature; this latter is insignificant when compared with the analogous state in pulmonary phthisis.

It rarely happens that the digestive organs evince any morbid action in this affection, certainly not directly in consequence of it.

The partial loss of the hair, weakness of the sexual instinct, absence of the catamenia, and other evidences of wasting of the bodily powers, so commonly early observed in patients subjects of phthisical degeneration in other organs, are not observed in simple laryngeal, except it has lasted a long time and has proved nearly destructive to life.

Before the invention of the laryngoscope the only means of mediate investigation was the "tactus-cruditus," which could have been of little service, except to detect destructive action of the epiglottis, and in another condition which often forms one stage of this affection, viz., œdema glottidis. Dr. Buck has given full and careful directions how to conduct this means of exploration. It depends upon a thorough knowledge of the anatomy of the parts and a familiarity of touch.\*

By means of the stethoscope we can detect, when there is much mucous or pus present in the larynx, large, moist, and sub-crepitant râles. When fluid is not present, we will get a high-pitched sound in respiration, as an evidence of constriction. These sounds will, of course, be most strongly marked at the point of greatest interference with respiration, and through the tissues of the neck transmit the sound with remark-

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\* Trans. Am. Med. Ass., vol. i., 1848, and vol. iv., 1851.

able distinctness, yet it will generally disappear as our examination is extended towards the lungs.

Ocular inspection of the pharynx in this affection, when there is associated tubercular cachexia, discloses a marked anæmic appearance, and at the same time unusual capacity (probably from atrophy). This condition should always invite examination of the whole **respiratory tract**.

It needs no argument from us to convince you of the superior advantages of the laryngoscope over all other means of investigation. It reveals to us, with no chance for error of judgment, all the pathological changes we have previously described, except, of course, those deep in the substance of the tissues, and these even are attended with superficial changes from which we can infer the former.

We have reflected in the laryngeal mirror, first, the epiglottis, which we may find anæmic, congested, swollen, or red, distorted or destroyed in different degrees. We may find the mucous membrane of the whole larynx in an unusually pale, almost transparent state, with here and there red velvety patches, or, perhaps, small points of ulceration. At other times there may be seen a general condition of congestion of the whole laryngeal mucous membrane, even including the vocal cords.

The appearance of the interior of the larynx, so far described, is characteristic of all forms of chronic laryngitis. However, as the disease progresses and infiltration occurs, we find a degree of swelling takes place at certain parts that is highly characteristic. The outline of the arytenoid cartilages becomes transformed into pyriform-shaped bodies, with their base situated posteriorly and apex upward, forward, and outward; the ary-epiglottic folds participate in the formation of this tumor, which may at first involve only one side, but sooner or later extends to the other. When both sides are thus affected, the two will be seen in contact in the

median line; or they may even become so large as to intercept a view of the parts below. These tumors are of a pale color, and usually covered with mucus and pus given off their ulcerated surfaces. When suppuration takes place within them, its evacuation is attended with a diminution in size, and pus can be seen escaping from the opening, which often enlarges so as to expose the diseased cartilage at its bottom.

The ventricular bands often appear distended, overhanging the vocal cords themselves, while the latter are often seen highly inflamed, losing their characteristic white color, or ulcerated at the processus vocalis and along their margins, the borders of which are sometimes studded with small granulations of a poly-poid appearance.

#### DIAGNOSIS.

There are but few morbid conditions of the larynx whose lesions are liable to be confounded with those of this affection. Its beginning is, as we have seen, often insidious but progressive, though at times it may supervene on an acute laryngitis, in which case there is nothing characteristic in the local primary manifestations; its objective symptoms are manifested in the voice, cough, respiration, etc., and are, therefore, common to nearly all organic alterations depending upon inflammation, ulceration, and œdema. We are, therefore, compelled to make our chief dependence for reliable diagnosis upon the evidence furnished by the laryngoscope. The obstinate progress of the disease, its long standing, the harassing cough and general constitutional deterioration, with the considerable thickening of the parts, are among the differentiating points to be considered in distinguishing this affection from chronic laryngitis. In this latter disease we always have an active bright red-congestion, which involves also the pharynx, and this, with the uvula, are

generally relaxed. Another distinguishing mark is the superficial nature of this ulceration compared with that of laryngeal phthisis. The microscope is of service here.

In simple catarrhal laryngitis the mucous secretion is effected without a destruction of the epithelium; \* while in the first lesion of laryngeal phthisis this is destroyed, leaving a new mucous surface, which pours out a muco-purulent secretion.†

Formerly it was necessary to describe in detail the symptoms to distinguish spasmodic asthma, but now we can determine at a glance the presence or absence of organic changes, though the complete remission of the dyspnoea in the one case, and its stridulous character in the other, is usually sufficient to distinguish the affection.

Acute cedema is recognized by the sudden onset of the attack, previous freedom from symptoms of disease, and the transparency of the tumor, which is the only local evidence of disease.

The majority of the benign growths that appear in the larynx are readily recognized by the aid of the laryngoscope, many of them being pedunculated or sessile, and not intimately blended with the adjacent tissues.

Cancerous growths are not so easily distinguished from appearances exhibited in certain stages of laryngeal phthisis, and our diagnosis will rest, in addition to the information supplied by the constitutional history and objective symptoms, on the fact of its being blended thoroughly with the surrounding tissues, extending beyond the larynx, and not involving both sides to the same extent. Displacement of the larynx by the growth is common. When the malignant growth

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\* Rindfleisch, in *Archiv f. Path. Anat.*, von Virchow, t. xxi.

† *Dict. Encyc. des Sci. Med.*, p. 644.

becomes ulcerated, the discharge has a characteristic offensive odor. A microscopic examination of fragments will often aid us in these cases.

Syphilitic lesions frequently locate themselves in the larynx, and often give evidence of their presence in a similar manner to like lesions of laryngeal phthisis. The collateral symptoms that exist, or may have existed, on the skin and elsewhere, are of prime importance as an aid to differential diagnosis. Syphilitic ulcerations in the larynx are very commonly extensions of similar conditions in the nasal fossæ, palate, or pharynx, while in laryngeal phthisis this is rarely the case. In the latter disease the mucous membrane is usually paler than normal, even when there is considerable thickening; in syphilitic inflammation, on the contrary, it has a dusky color, which by some is considered pathognomonic. There is nothing characteristic in the form or locality of the ulceration. Trousseau quotes Dr. Krishaber as authority for the statement that simple non-diastrhetic ulceration of the larynx is the most destructive.\* But it certainly is not rare to find the epiglottis completely destroyed by syphilis. There is, however, comparatively less thickening of the tissues, though the superficial ulceration may be larger in syphilis than in phthisical laryngitis. The same authority states that the aphonia of syphilis is almost always caused by a puffy state of the superior vocal cords, and that of laryngeal phthisis is more commonly caused by ulceration and inflammation of the vocal cords proper.

Warty growths, or condylomata, are often seen as a result of syphilis, but never in laryngeal phthisis: they are observed as whitish, uneven elevations on the mucous membrane, which sometimes ulcerate and always quickly disappear under proper treatment. They are

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\* Clinical Lectures, Amer. Trans., vol. iii., p. 106.

not likely to be mistaken for the small, polyp-like bodies on the edges of the ulcers sometimes seen in laryngeal phthisis. In syphilitic laryngitis the epiglottis is most frequently the first seat of attack, and the mucous membrane covering the arytenoid cartilages the last, even after the vocal cords and other parts of the larynx; while in laryngeal phthisis the ary-epiglottic folds, particularly at the point of the arytenoid cartilages, are first in the order of attack, the epiglottis later, and after it the ventricular bands and vocal cords.

The principal lesions not present in syphilis, but which are almost constant in laryngeal phthisis, and peculiar to it, are the pyriform swellings of the ary-epiglottic folds and ulcerations, preceded by a thickening of the tissues and of a slow and chronic disposition.

#### PROGNOSIS.

Were the disease purely local, our prognosis would be favorable; but when we consider it a local manifestation, modified by a cachectic constitution, our prognosis must be unfavorable, except our patient early present himself, and before any other important organ is seriously impaired. There may be cases, well advanced too, of recovery, as there are instances of recovery from pulmonary phthisis, but they are comparatively few in number. As is often the manner in pulmonary phthisis, so in laryngeal phthisis, death may result not so much from the local trouble as from the combined depressing and wasting influences of intercurrent maladies. Doubtless cases are reported by competent authority where death has resulted from the hectic fever, harassing cough, emaciation, and debility, when no other disease has supervened; but usually the immediate cause of death in such patients is asphyxia. Many escape a fatal termination—how many we cannot tell—so uncertain is the

diagnosis in the very beginning of the affection, and this fact should be a sufficient monition for an early and general examination whenever the laryngeal affection shows a tendency to persist. Local treatment modifies very much the course of the disease: the edema may be reduced, the congestion relieved, and the ulceration often healed. A few cases may recover, but we can almost always afford our patient at least temporary relief from suffering and prolong life.

#### TREATMENT.

Treatment can naturally be considered in its three aspects—preventive, remedial, and palliative.

The first consists of a correction of any morbid habit or tendency of the system, and controlling, without delay, any slight manifestation of disease in the throat. There is no affection where the importance that general treatment should be early entered upon is more manifest. Correct the tendency to degeneration, and half the battle is won; but if this point has been passed, and irregularities are already established, it is of even more importance to correct *them*.

In the list of causes, we have considered at sufficient length the different conditions that seem to invite laryngeal phthisis, and it is unnecessary to repeat general rules of treatment for the different cachexia so often associated with this disorder.

It is a good axiom never to allow the system to harbor anything evil if we can prevent it.

If, for instance, a patient presents himself evidently debilitated, and illy nourished and generally deteriorated, in consequence of a strumous diathesis, and there is reason to apprehend any laryngeal trouble, there is at once suggested a residence for the summer at the sea-side, or for the winter in a more equable climate than ours; pure air and proper exercise in it, nourishing but unstimulating food, warm clothing and avoid-

ance of excess of all kinds, whether in the use of the voice or in overtaxing body or mind. If sea-bathing is not practical, salt-water bathing, cold in hot weather and warm in cold, to insure a free action of the cutaneous surface. The strength of the patient must be early considered, and remedies directed that will tend to increase constructive metamorphosis, give vigor to the solids, and vitality to the blood. The destructive metamorphosis should be checked till at least it is more than counterbalanced by the reparative power.

Catarrhs of all kinds, wherever situated, should receive due attention, as well as excessive menstruation, when it exists.

For remedies, food, tonics, cod-liver oil, iron, sulphur, and arsenic, may be severally indicated when the digestive functions are well performed. When the building-up process is once established, iodide of potassium will often increase it. Should reflex irritation from the lungs or any distant part be threatening, some of the bromides may be of service, and if there is already a congestion or inflammation in the air-passages below the larynx, some inhalation of an astringent, sedative, or antiseptic nature will be of much service; carbolic acid thus employed has often seemed to us to allay irritation there, and thus indirectly prevent trouble in the larynx.

If pulmonary phthisis exists, though it even be an advanced stage of the preceding diathesis, what we have said there will equally apply here, and, if possible, should be insisted upon with even more emphasis, because of the gravity of the complication.

We will only refer here to the value of counter-irritation over the diseased lung, and caution against the use of iron and stimulants during the inflammatory states.

Inhalations, if properly administered, are always of advantage, whether antiseptic, as carbolic acid, or soothing and sedative, as preparations of tar, bromide

of ammonium, steam, etc.; these will always have a favorable influence on the cough. Should the statement of Niemeyer, that the sufferer from pulmonary phthisis has most to fear tuberculosis, prove to be correct, we have a powerful weapon in antiseptic inhalations. The syphilitic darts, and any special diathesis, the presence of whose poison in the system is impairing it, must be each combated.

The remedial measures will be chiefly directed to the local manifestation of the disease, and at the same time those should be employed calculated to prove effective against any intercurrent disorders resulting therefrom. The cases where the affection is purely local, or where it is but slightly modified by some cachexia, afford the most encouragement for the success of treatment whether general or local. The latter has the most power to back the tide of disease, and the former to preserve the ground gained, and prevent a relapse.

When we have the first lesions, congestion and erosion to deal with, a spray of some astringent, as solutions of tannin and glycerine, of alum, of the sulphate of zinc, or of iodine, will be of the utmost value: at the same time some counter-irritant over the larynx and on its sides, by means of tincture of iodine, the psia plaster, or croton oil; when this is not sufficient, a small blister at the point indicated, especially on the access of an acute exacerbation, to be allowed to heal at once, and again repeated rather than to be managed as an issue: if the latter object is sought, we would prefer to place it at a distance, as on the nape of the neck.

When the mucous membrane and submucous tissue is hypertrophied, no remedy, locally applied, will accomplish so much as solutions of nitrate of silver of different degrees of strength, and applied in the form of a fine spray.

Of all remedies for topical application, none is so

much used, and none so much abused, none has stronger advocates or more bitter opponents, and probably none so generally useful, though, when misused, capable of doing greater harm, than nitrate of silver.

If there is much œdema, it must be relieved by scarification, advantageously followed by some one of the previous remedies, or by the application, in which case it is to be very circumscribed, of the chloride of zinc or of gold, by means of saturated lint on the end of a probe.

When there is much acute congestion or inflammatory swelling, and the mucous membrane livid and dry, inhalation of steam or of some balsamic fluid, or the local spraying with tamin and glycerine, will sometimes unload the vessels and give relief without incision. Should an abscess make its appearance, its early evacuation by free incision will limit the destruction, relieve the pain, and perhaps prevent suffocation.\*

When ulceration is present, extending into or deeper than the mucous membrane, or acting on a cartilage, as the epiglottis, nitrate of silver will be of great service, or chromic acid with one-fourth its weight of water. Iodoform, in the form of a powder, we have found particularly useful in aiding cicatrization and stopping pain.\*

Of associated or intercurrent disorders pharyngitis is very common, and may demand active attention. Most of the affections of the pharynx are similar to what we have described as occurring in the larynx, and the course of treatment pointed out for the diseases of the latter is adapted to them also. In addition thereto, when we have a congested or hypertrophied state of its mucous membrane, with dryness or diminished secretion, chlorate of potash, preferably in the form of troches, is of great value; while in the opposite

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\* For cases illustrating its use by the author, see *THE RECORD* for Sept. 15th, 1873, p. 449.

condition, when the parts are relaxed and flabby with excess of secretion, lozenges of tannic acid or kino are serviceable; but if they are merely irritable and sensitive, bismuth, gum-drops, marsh-mallow or slippery-elm decoctions will be grateful. The patient can co-operate effectively, when the pharynx is involved, by employing solutions of alum, tannin, and salt, in the manner of a douche, directed against its walls; \* the remedies thus used being far more profitable than when managed as a gargle.

If enlarged tonsils be a source of irritation, their speedy removal will be called for.

Sometimes a febrile state, greater than would be expected from the lesion alone, will be met with, in which case it will be advantageous to administer alkalies, as the carbonates of soda or potash; or if a state of atony or anæmia, iron, quinine, or strychnia, or, which is a good combination, their phosphates, according to the formula of Aitken.

Should a diarrhoea make its appearance, it should always receive immediate attention. Remedies called for as curative will, of course, when it is too late in the disease to expect recovery, have a palliative influence.

It should be our pleasure as well as duty to tax our energies to assuage suffering, for under the most favorable circumstances, when the disease goes to a fatal termination, or when it attends death from any other cause, much distress will rarely be avoided. Our resources are many, and our means of reaching the disease most complete.

One of the chief sources of danger in the last stage of laryngeal phthisis is death from apnœa, on account of closure of the glottis from œdema. Though the risk to the patient is less now than formerly, on ac-

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† For a description of this method by the author, see THE RECORD for Nov. 1st, 1873, p. 551.

count of our improved facilities of treatment, yet its possibility should not be overlooked, and we should be prepared to perform tracheotomy as a last resort when necessary.

Porter strongly advised it, though it was first suggested by Bryant.

Porter went so far as to practise it early in the disease as a method of treatment; his object was to put the larynx in a state of rest, the most favorable for recovery. If there is necrosed cartilage that is causing irritation and that threatens suffocation, tracheotomy may give a chance for its safe removal and healing of the wound.

There is much encouragement for this proceeding, if no other part of the system is so far diseased as to be itself a source of danger.

The pain and sense of constriction, which often extends from the larynx to the shoulders and to the ears, are best relieved by stimulating or hot external lotions; these are best applied on spongio-piline, which can be fitted to the neck, and we can thus avoid the weighty poultice.

When this pain in the ears requires interference, anodyne applications in the external auditory canal will sometimes notably give relief, and it is the testimony of a patient now under our care, that relief also extends to the larynx.

The best local anæsthetic in our hands has been iodoform, applied directly to the ulcerations after the removal of the discharge. This is best done by means of a curved tube, provided with a piston, which, under the direction of the laryngeal mirror, can be easily used.

We shall always have occasion, in this stage of the disease, to employ those soothing and mechanical remedies previously spoken of, and we might advantageously add thereto preparations of refined chocolate, which nourishes as well as soothes.









